CONSOLIDATED INFORMATION TECHNOLOGY SERVICES
TASK ASSIGNMENT (TA)

1. **TITLE:** (D401B) RFB UPWT FACILITY EPICS SOFTWARE DEVELOPMENT

TA No:	233-Rev4	
Task Area Monitor:	**Alternate Task Area Monitor:**	None
NASA POC:	**Software Control Class:**	Low Control
Type of Task:	Recurring Task	

2. BACKGROUND

This task is an extensive modification of Task RBJ005 for Software Development support.

The Research Facilities Branch (RFB) test sequencing environment consists of a heterogeneous network of UNIX workstations and PC systems in the RFB facilities e.g., Unitary Plan Wind Tunnel (B1251) and 14 x 22 Subsonic Wind Tunnel (B1212). Currentt software (SW) includes various commercial and government aero-space analysis and graphics software packages, as well as license managers, compilers and software developer utilities. On-site system software development is required to interface with new input/output components interfacing with the EPICS system, maintain network security for the EPICS system, and improved SW operations for NASA personnel operating these systems.

The purpose of this project is to improve reliability and reduce the possibility of associated tunnel downtime by improving the facility sequencing system software to more favorable, reliable, and less expensive COTS SW. The current control algorithms will have improved reliability and crisp interfaces with IOCs. The upgrade of the system controls SW to new EPICS interfaces through PCs operating with Linux rather than outdated UNIX platforms is a requirement for all of the facility customers who demand a reliable, efficient system for testing their models. The existing Unitary Tunnel Facility system is hampered by the use of equipment that is no longer supported by the manufacturers. The system currently functions as well as possible, but a hardware failure could lead to significant downtime. As a result, a more robust system is desired. These corresponding software upgrades and/or updates are desirable and prudent at this time. All tests/programs using the Unitary Facility are affected by these necessary updates for reliability.

3. OBJECTIVE

Successfully demonstrate that a less expensive prototype i686 PC computer running free Linux operating systems can be used with Experimental Physics and Industrial Control Systems (EPICS) data acquisition/control systems. Demonstrate the function of compiling WindRiver VxWorks Software (SW) and all other SW determining the need for a Linux cross-compiler and license such that a direct plug and play aiternative might be revealed. Development software systems will be supplied by the UPWT.

4. GENERAL IT SUPPORT SERVICES

General IT Support Services Performance Metrics

Performance Standard: Assigned activities are accomplished satisfactorily and within the pre-determined schedule to permit 1) uninterrupted support of computing complex and facilities in RFB, and 2) application of newly developed/modified testing techniques in the Research Facilities Branch.

Performance Metrics:

Exceeds: All assigned activities are accomplished satisfactorily on or ahead of the pre-determined schedule. Suggestions are made and acted on that lead to advancements towards the goals of the tests.

Meets: Any deficiencies or slippage in one or more activities are offset by improvements or gains in other activities.

Fails: Deficiencies or slippage in assigned activities have had a detrimental effect on the objectives of the operation of the RFB.

Performance Standard: The systems to which these services apply are operated efficiently and with minimal disruption in capability due to malfunctions.

Performance Metrics:

Exceeds: Meets and significant improvement in efficiency is noted; or a successful and rapid recovery from a malfunction or disaster has been accomplished; or the degradation of capability due to malfunctions has been significantly mitigated by system administrator actions.

Meets: Daily tuning of systems is performed. Response to problems during prime shift is within two hours of notification. Trouble reporting system is kept current and daily follow up of problem resolution is carried out. Users are kept informed.

Fails: Any of the requirements of this subsection are not satisfied.

Performance Standard: The systems to which these services apply are kept up-to-date with minimum disruption in capability due to upgrades.

Performance Metrics:

Exceeds: All notifications of updates or upgrades are acted upon and all approved upgrades are installed on schedule and without disruption; or ¿meets¿ and improvements to systems are recommended and adopted.

Meets: All notifications of updates or upgrades are acted upon. All approved upgrades are installed with minor delays and disruptions.

Fails: Any of the requirements of this subsection are not satisfied.

5. SYSTEM AND APPLICATION DEVELOPMENT SERVICES

None required.

6. WORK-AREA SPECIFIC SERVICES

Work Area Title: Software development for PC host controller

LaRC Manager:

Work Area Description: Permanently replace the current HP 9000/745 computers with new Linux PC computers (procured by the facility and required for this work activity) by developing SW interfaces and determining possible SW interface improvements. Examine the need for a Linux Cross Compiler for VxWorks SW that may be required to totally remove dependency on the HP computer. Determine SW upgrade or changes, that affect VxWorks SW on the Linux PC and interfaces with IOC executables that must be transferred to the Linux PC.

Work Area Requirements: The Contractor shall research current computer host platforms SW programs and interfaces for EPICS (Experimental Physics Industrial Control Systems) based systems, utilizing local contacts such as Jefferson Labs as well as other EPICS collaboration contacts. The Contractor shall recommend and demonstrate options for updating system software and develop test cases for a PC based host at UPWT and 14x22 Wind Tunnels. The options should support both the existing EPICS release (R3.12) and the most recent stable release of EPICS.

7. Exhibit A

None required.

8. SPECIAL SECURITY REQUIREMENTS

None required.

9. SOFTWARE ENGINEERING PROCESS REQUIREMENTS

None required.

10. JOINT REVIEW SCHEDULE

There will be a joint review of the work of this task at meetings to be held at least quarterly. Intermediate meetings can be called on an as needed basis if deemed necessary by the NASA technical monitor or Contractor personnel. The following persons or their alternates are required to attend: NASA technical monitor and Contractor personnel assigned to task. Technical performance, timeliness, cost and schedule will be discussed. The Contractor will maintain minutes and at the beginning of each meeting the minutes of the previous meeting will be reviewed.
The ConITS Contractor will provide System Administration logs, software package update reports, help request reports, configuration management plan, and disaster recovery plan as required.

11. PERIOD OF PERFORMANCE

This TA is effective from 09/18/06 to 04/27/10

12. TECHNICAL PERFORMANCE RATING

In evaluating Technical Performance, quality and timeliness shall be rated as follows:

Quality: 60% Timeliness: 40%

13. RESPONSE REQUIREMENTS

This Task Plan shall address the contractor's specific work plans, associated estimated labor hours, cost and schedule.

14. FUNDING INFORMATION

Funding has not been entered for this TA.

15. MILESTONES

None required.

16. DELIVERABLES

None required.

17. FILE ATTACHMENTS

None.